

For recording your own CDs or editing audio files on the computer, it can be a good idea to have an S/PDIF input and output available, for example on a sound card. Unfortunately, the capabilities of such interfaces on inexpensive sound cards are fairly limited, which you should take into account before making a purchase. First of all, though, what do you need to know about such connections, and are they really necessary?

S/PDIF connections for the PC

useful, or an unnecessary luxury?

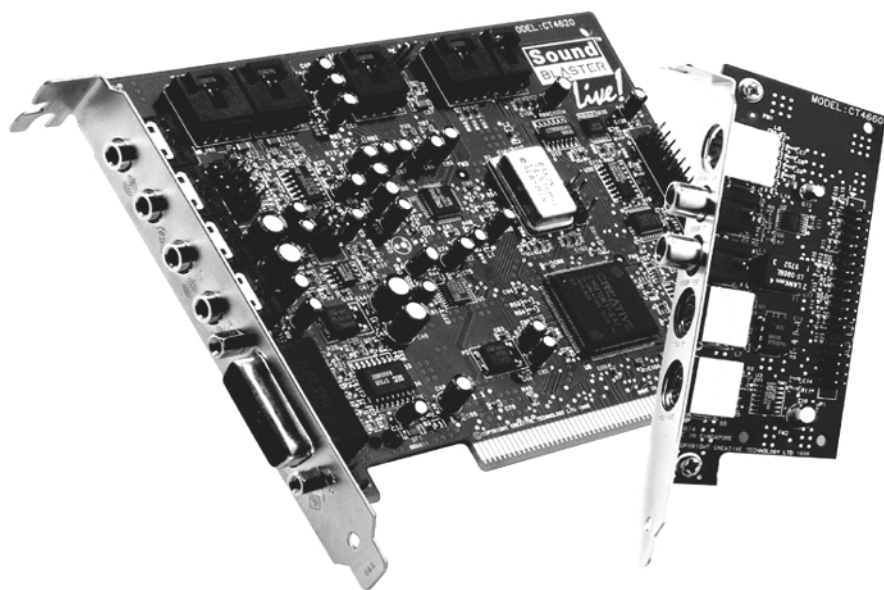


Figure 1. The Soundblaster Live! has two connector brackets. The digital connectors are located on the second bracket (photo: Creative).

lowly but surely, affordable sound cards with an input and/or output for S/PDIF signals as a standard feature are becoming available in increasing numbers. The S/PDIF interface takes the form of coaxial (Cinch) or optical-fibre connectors. With this interface, it is possible to transfer digital audio signals from the computer to a recorder (or the other way around) without having

to pass through an intermediate analogue stage.

Only 48 kHz?

One of the currently most popular sound cards, the Soundblaster Live!, has a digital input and a digital output as standard features. However, before you start using them, you should under-

stand what happens to the digital signal inside the card.

The heart of this sound card is a DSP chip that performs all digital processing at a fixed sampling rate of 48 kHz. All digital input data are converted to this sampling rate by means of a sampling rate converter. The advantage of this is that all types of processing, such as adjusting the volume via the Windows mixing panel, can be performed by the DSP without the need for any extra calculations to convert between different sampling rates.

The digital output signal also works with a fixed sampling rate, which is the same 48 kHz. This is excellent for recording data from the PC on a DAT recorder, since this is the standard sampling rate for such recorders. However, if you feed the digital signal from a CD player to the sound card, the sampling rate converter will change the signal from 44.1 kHz to 48 kHz. Although this process is practically loss-free, it still amounts to an extra conversion step. And if you want to output the digital signal from the sound card to a device that uses a sampling rate of 44.1 kHz, you are simply out of luck, since that is not possible with this card.

Still, these restrictions are not as bad as they may seem at first glance, as long as you first carefully think through what you want to do with the S/PDIF connection.

Applications

For most hobby applications, digital connections on the sound card will rarely be necessary. Anyone who wants to make compilations of music from CDs can simply read in the tracks digitally using his or her CD-ROM drive or CD burner, and then put the modified selection on a new CD. Digital inputs and outputs on the sound card are thus unnecessary for this task.

However, anyone who wants play back data from a MiniDisc or DAT cassette to the computer does in fact need a sound card with a digital input. If in addition the data are to be transferred back to a DAT or MiniDisc recorder after being edited on the computer, a digital output is also necessary. As already noted, the standard sampling rate for DAT is 48 kHz. In a MiniDisc recorder, the data are always first passed through a sampling rate converter internal to the device and then compressed. In this case we do not have to be concerned about the sampling rate used by the sound card — 48 kHz is just fine!

On the other hand, if you want to copy your own music from a DAT to a CD via the computer, then you will have to somehow arrange for the data to be converted from 48 to 44.1 kHz. This can be done using software on the PC.

Some sound cards have only a digital output, with no digital input. Such a card is good for fanatical game players (among others) who want to feed the sound signal to the digital input of their stereo system in order to get the best possible results.

Nonetheless, in most cases the best advice is to take a good second look at your specific application. Frequently, you will conclude that there is no specific requirement for a digital input or output.

Note well that this recommendation applies to typical hobby applications. For professional applications, the requirements are naturally quite different.

Other cards

The Soundblaster Live! is fully adequate for the vast majority of PC users, for 99% of all applications. Another general-purpose sound card that has digital inputs and outputs is the Audiowerk2 card from Emagic, at around £200.

However, if you do a lot of work with digital audio signals, it's better to use a card that is specially designed for such use. A well-known and affordable example is the Digi32 card from RME, which has both RCA and Toslink connectors and supports several different

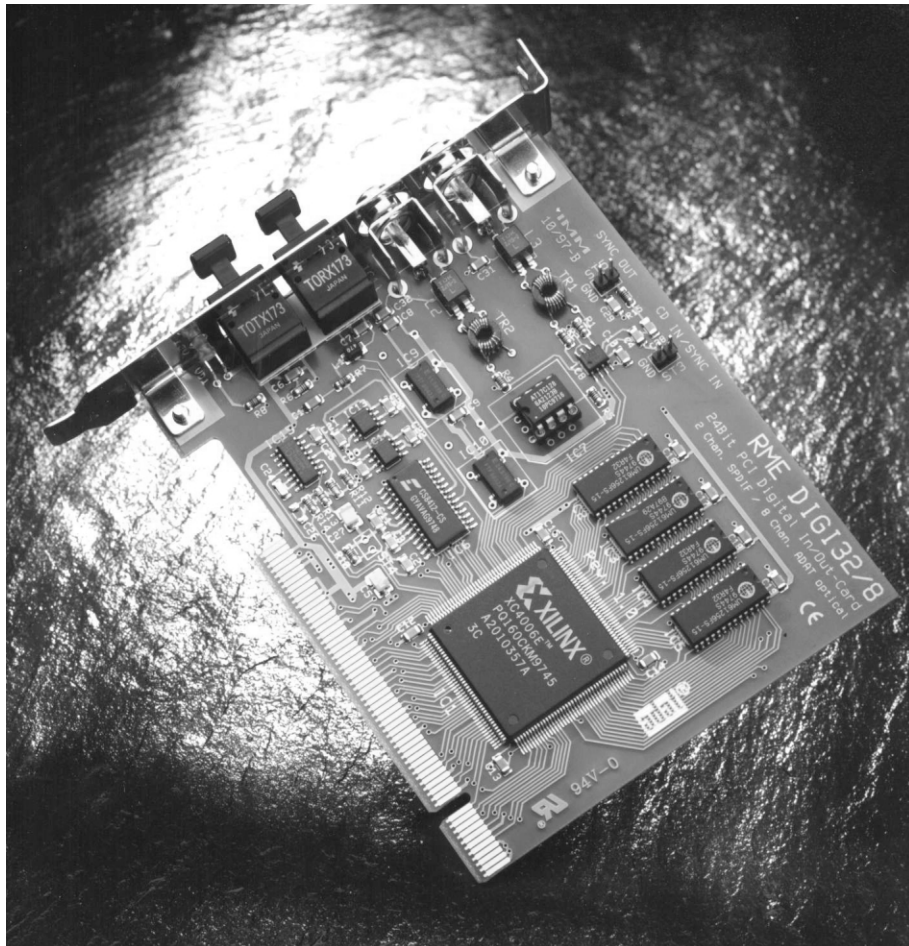


Figure 2. If you work a lot with digital audio signals, you are better off to buy a card that is specially designed for such signals, such as the Digi32 from the German firm RME (photo: RME).

sampling rates. The price of this card is around £240.

For the true audio enthusiast who does a lot of audio editing with the computer, it is convenient to have all the audio connectors in a more accessible location than at the rear of the computer. The Guillemot Maxi Studio Isis (currently around £300) is in this case an outstanding solution, since it has all connectors located in a separate box,

along with the converters.

If you want to be well prepared for what's coming next, it's a good idea to buy a card that supports 96 kHz sampling with 24-bit resolution. This is the new standard for DVD audio. RME offers cards with this capability, but there are others available as well, such as the Terratec EWS 88 MT card (at around £400).

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Figure 3. This card from Guillemot provides a handy setup for the true audio hobbyist, since it has all connectors and the converters located in a separate enclosure (photo: Guillemot).